PEPPERELL COVE
KITTERY, MAINE

SURVEY
(REVIEW OF REPORTS)

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM, MASS.

APRIL 8, 1959

50

SURVEY

REVIEW OF REPORTS

PEPPERELL COVE
KITTERY, MAINE

SYLLABUS

The Division Engineer finds that prospective benefits to commercial lobster fishing and recreational navigation are sufficient to warrant further Federal improvement of Pepperell Cove. He therefore recommends modification of the existing Federal navigation project to provide for a channel 6 feet deep and 60 feet wide extending from Pepperell Cove about 4,000 feet up Chauncey Creek with a turning basin opposite the Whitham Lobster Company and 5 acres of anchorage 6 feet deep, at an estimated cost to the United States of $170,000 for construction and $2,500 for annual maintenance. The total project cost is estimated (March 1959) at $197,000, including $ 8,000 for pre-authorization studies and $4,000 for navigation costs. The benefit cost ratio is 1.2.

The modification is recommended subject to the requirement that local interests contribute 8 percent of the construction cost, construct a public landing, provide necessary lands, easements and rights-of-way and hold and save the United States free from damages that may result from construction. Local costs are estimated at $15,000 for the cash contribution and $10,000 for the public landing.

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U. S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM 54, MASS.

8 April 1959

NEDGW

SUBJECT: Survey (Review of Reports) of Pepperell Cove, Kittery, Maine.

TO: Chief of Engineers, Department of the Army,
Washington 25, D. C.

AUTHORITY

1. This report is submitted in compliance with the following resolutions adopted by the Committee of Public Works of the United States Senate and The House of Representatives, United States, on March 19, 1954 and June 29, 1955 respectively.

> "RESOLVED BY THE COMMITTEE ON PUBLIC WORKS, UNITED STATES SENATE, that the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on Pepperell Cove, Kittery Point, Maine, submitted in House Document 1081, Sixtieth Congress, Second Session with a view to determining whether the existing project should be modified in any way at this time."

> "RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE HOUSE OF REPRESENTATIVES, UNITED STATES, that the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review the reports on Pepperell Cove, Kittery Point, Maine, submitted in House Document Numbered 1081, Sixtieth Congress, Second Session, and other pertinent reports with a view to determining whether the existing project should be modified in any way at this time."

2. A report of preliminary examination scope was authorized by letter of the Chief of Engineers dated April 14, 1954. A partially favorable preliminary examination report was submitted December 9, 1955. A letter from the Chief of Engineers dated

March 13, 1956 authorized the preparation of a report of survey scope in accordance with an indorsement by The Board of Engineers for Rivers and Harbors dated February 26, 1956 which reads as follows:

> "The Board concurs with the Division Engineer in recommending that no further survey be made of the proposed breakwater at Pepperell Cove, but recommends that a survey be made to determine the cost of providing and extent of channel improvements warranted in Chauncey Creek for the purpose of facilitating commercial navigation and providing needed shelter for recreational craft."

PURPOSE AND EXTENT OF STUDY

3. Engineering and economic studies have been made to determine the economic justification of modification of the Federal navigation project for Pepperell Cove. A detailed hydrographic survey consisting of soundings and probings was made from which the character and estimated quantities of the material to be removed was determined. Available maps, commercial statistics, and other data referring to the locality were studied. A public hearing on proposed improvements at Pepperell Cove was held in Kittery, Maine on August 24, 1955 to obtain views of local interests and the information obtained is described in paragraph 14 of this report. Further information and data concerning the commercial and recreational use of Chauncey Creek and the surrounding area have been obtained by recent field investigation and contact with local interests. All additions and changes in improvements which have been requested subsequent to the public hearing have been incorporated in this report.

DESCRIPTION

4. Pepperell Cove is a partially protected body of water in Kittery, Maine, located on the eastern side of Portsmouth Harbor at the mouth of the Piscataqua River, which forms the Maine - New Hampshire boundary in the area. It covers an area of about 100 acres and is exposed to southerly winds. Depths at the entrance to the cove range from 30 to 70 feet. Depths within the cove average 9 feet at mean low water. Fishing Island and Gooseberry Island, on the southeast side of the cove, are surrounded by ledge areas which are exposed at low water and almost form a connection between the two islands.

5. Chauncey Creek enters Pepperell Cove from the northeast between the mainland and Gooseberry Island. It is a winding tidal stream having a width of about 300 feet and a depth in the natural channel of less than 2 feet at the mouth. The depth in the natural

channel varies from 2 to 9 feet for a distance of about 0.4 miles upstream where the width narrows to about 150 feet. The mean range of tide is 8.7 feet and the spring range is 10.0 feet. The locality is shown on United States Coast and Geodetic Survey Charts, Number 329 and 1206, and on the plan accompanying this report.

TRIBUTARY AREA

6. The area immediately tributary to Pepperell Cove and Chauncey Creek is the Kittery Point section of the town of Kittery, Maine. In 1950, Kittery had a population of 8,088 and in 1953 a total real estate valuation of $3,167,125. The town of New Castle and the City of Portsmouth, in New Hampshire, are on the south side of Portsmouth Harbor and the Piscataqua River. New Castle had a population of 583 and Portsmouth 18,793 in 1950. The principal industries of the area are the manufacture of shoes and gypsum products, generation of electric power, operation of distribution terminals for bulk coal and petroleum products and the Portsmouth Naval Base. The only commercial activity in Pepperell Cove and Chauncey Creek is the receipt of fish and lobsters and furnishing of services and supplies during the season to locally based and transient pleasure craft.

7. The Boston and Maine Railroad serves most communities in the vicinity of Pepperell Cove. The main line to Portland, Maine passes through Portsmouth and a branch line runs along the westerly bank of the Piscataqua River serving major industrial developments. The area is served also by bus lines and trucking companies which operate over a network of improved highways.

BRIDGES

8. There are no bridges crossing Pepperell Cove. A single fixed span highway bridge crosses Chauncey Creek about 0.6 mile above the head of the desired improvement.

PRIOR REPORTS

9. Pepperell Cove, Maine has been the subject of four reports as follows:

(a) A preliminary examination dated November 21, 1890 and published in House Document No. 62, Fifty-first Congress, Second Session was unfavorable to deepening the cove to 12 feet at mean low water and to the construction of a breakwater between Gooseberry and Fishing Islands.

(b) A preliminary examination dated August 21, 1907.

(c) A survey report dated October 6, 1908, both published in House Document No. 1081, Sixtieth Congress, Second Session, were favorable to dredging the cove to a depth of 12 feet at mean low water and the removal of Logy Ledge at its entrance to a depth of 12.5 feet at mean low water. The latter two reports form the basis for the existing Federal project for the improvement of Pepperell Cove for navigation.

(d) A preliminary examination (review of reports) dated December 9, 1955 recommended no further survey be made of a proposed breakwater at Pepperell Cove but that a survey be made to determine the cost of providing, and extent of channel improvements warranted, in Chauncey Creek for the purpose of facilitating commercial navigation and providing needed shelter for recreational craft.

EXISTING CORPS OF ENGINEERS' PROJECT

10. The Federal project for the improvement of Pepperell Cove was adopted by the River and Harbor Act of 1910. It provides an anchorage area of about 1,450 feet by 1,250 feet to be secured by dredging and rock excavation; the general depth to be 12 feet at mean low water with 12.5 feet over rock. The project was completed in 1916. The total cost to the United States has been $158,400.00 of which $ 158,262.28 was for new work and $137.72 was for maintenance.

LOCAL COOPERATION ON EXISTING PROJECT

11. No conditions of local cooperation were prescribed for the existing project.

OTHER IMPROVEMENTS

12. There have been no improvements to the channels or anchorage in Pepperell Cove or in Chauncey Creek by local interests. A town wharf, replacing a structure damaged by storms, has been built at the head of the cove. This wharf was completed in 1955 largely with emergency funds provided by the Federal Government for reconstruction of public structures damaged by hurricane.

TERMINAL AND TRANSFER FACILITIES

13. There are two wharves in Pepperell Cove. The public town landing on the northeast side of the cove has a depth of 12 feet at mean low water along side the 20-foot square float at the outer end. A small private wharf just east of the town landing is used for the handling of fish and lobsters. Food, fuel and water, and a paved boat launching ramp, are available at the town landing. The landing is used by the Kittery Point Boat Club, transient recreational and fishing craft and by the local lobstermen during low tide periods when they cannot reach their usual landings. In Chauncey Creek there are 3 private wharves and two lobster dealers. The Whitham Lobster Company has two wharves, at about 2 feet above mean low water, and 5 marine railways. Fuel and water are available. All the Chauncey Creek wharves are used by lobster fishermen. These facilities are generally sufficient to meet the needs of existing traffic but their use is restricted due to lack of depth of water alongside and in the approach channel from Pepperell Cove.

IMPROVEMENT DESIRED

14. In order to obtain the views of local interests with respect to the improvement of Pepperell Cove and Chauncey Creek, a public hearing was held at Kittery, Maine on August 24, 1955. This hearing was attended by representatives of the Federal, State, and Local Governments, the local fishing industry, and several yachting and Recreational Interests. The improvements desired by local interests as stated at this public hearing were twofold (a) for the construction of a breakwater to protect the anchorage for small boats in Pepperell Cove and (b) for the dredging of a channel in Chauncey Creek to provide a refuge for small boats in rough weather. A preliminary examination report on these desired improvements, dated December 1955, recommended no further consideration of breakwater construction due to prohibitive cost but did recommend a further survey to determine the cost of providing and extent of channel improvement warranted in Chauncey Creek to facilitate commercial navigation and provide needed shelter for small craft. This survey was authorized by the Chief of Engineers March 3, 1956.

15. As a result of the recommendations in the preliminary examination report of December 1955 which showed the cost of breakwater construction prohibitive, a committee of local interests held an informal meeting at Kittery, Maine in December 1956 to consider further the improvements desired in Chauncey Creek. The local interests all agreed at this meeting that, without shelter from breakwater construction in Pepperell Cove, an entrance channel and anchorage area in Chauncey Creek for the safe mooring of small boats

in rough weather was essential and that consideration should be given to dredging a channel further up the Creek to the Whitham Lobster Company a distance of about 4,000 feet from the entrance in Pepperell Cove.

COMMERCE

16. Statistics to indicate the amount of commerce in Pepperell Cove and Chauncey Creek are not available in detail but town officials report that the annual value of commercial fishing in Pepperell Cove and Chauncey Creek is approximately $150,000, which represents a catch of about 400,000 pounds of lobsters. The local lobstermen estimate their catch averages about 50 pounds per trip and that the larger lobster boats make 5 trips a week for 8 months of the year while the smaller boats make 3 trips a week for 6 months. This information indicates a total catch of 395,000 pounds of lobster, with an average of 8,650 pounds annually for each of the larger boats. These figures are considered reasonable when compared to the estimate by the Town Officials, State of Maine statistics, and data from other harbors.

17. During the months of October, November, and December, the herring fishermen operate in the vicinity of Isles of Shoals and frequently come into Pepperell Cove to unload the catch. The catch is then transported overland to Lubec, Maine and sardine factories in the vicinity. A recreational fleet consisting of about 56 craft including outboards, sail boats and cruisers are based in Pepperell Cove and Chauncey Creek. During the season a large number of visiting cruisers moor in Pepperell Cove for shelter and supplies.

18. The present locally based fleet, and the expected growth with and without improvement of Chauncey Creek are classified by size and type below:

Length	In Pepperell Cove 15-25'	In Pepperell Cove 25-35'	In Chauncey Creek 15-25'	In Chauncey Creek 25-35'
Present fleet				
Lobster fishing	8	15	15	20
Recreational	13	6	37	0
Future Normal Growth				
Lobster fishing	0	2	2	2
Recreational	3	1	8	0

Length	In Pepperell Cove 15-25'	25-35'	In Chauncey Creek 15-25'	25-35'
Added if Chauncey Creek is Improved				
Lobster fishing	0	-2	2	4
Recreational	-3	-2	6	4
Anticipated Total Fleet				
Lobster fishing	8	15	19	26
Recreational	13	5	51	4
	21	20	70	30

VESSEL TRAFFIC

19. Pepperell Cove and adjacent Chauncey Creek are used as a mooring base for a fleet of recreational craft permanently based in the Cove. In addition, during the "yachting" season transient cruisers and sailing craft moor in Pepperell Cove temporarily for shelter and supplies.

20. Exact data of the number of fishing trips yearly in and out of Pepperell Cove and Chauncey Creek is not available. It is estimated that the 35 larger fishing boats average 5 round trips per week for a period of 8 months each year and 23 of the smaller open type craft average 3 round trips per week over a period of six months each year. On this basis it is estimated a total of about 7,900 round trips are made by lobster boats in and out of Pepperell Cove and Chauncey Creek. No information is available on the number of trips made by herring boats.

DIFFICULTIES ATTENDING NAVIGATION

21. Under the existing project for Pepperell Cove, adopted by the River and Harbor Act of 1910, an anchorage area of about 1,450 feet by 1,250 feet was dredged to a depth of 12 feet at mean low water. This work was completed in 1916 and although exposed to southerly winds was considered a suitable anchorage for schooners and barges then in common use. In recent years, with the development of the lobster fishing industry and an increase in recreational activities, a comparatively large fleet of small motor boats, cruisers, and sail boats have come into daily use of the Pepperell Cove anchorage area. They have found permanent mooring in Pepperell Cove unsatisfactory due to rough water and have constantly sought refuge in Chauncey Creek when tidal conditions permit. Information from local interests indicates that storm damage costs to boats in Pepperell Cove amount to $4,000 annually.

In addition, several boat landings are located in Chauncey Creek. The main difficulty attending navigation in Chauncey Creek is the lack of adequate depth of water in the creek. At the present time the creek has a depth of 2 feet below mean low water at the entrance and boats using the creek ground out at low tide.

WATER POWER AND OTHER SPECIAL SUBJECTS

22. There are no matters involved in this investigation concerning water power, flood control, pollution or related subjects. The desired improvement would have no adverse effect on wild life or shell fish.

PLAN OF IMPROVEMENT

23. At the hearing held at Kittery Point on August 24, 1955 to obtain views of local interests with respect to the improvement of Pepperell Cove and Chauncey Creek, officials of the Town of Kittery and representatives of fishing and recreational boating interests stressed the need of protection for safe anchorage in Pepperell Cove and requested construction of a breakwater between Gooseberry and Fishing Islands and the improvement of Chauncey Creek as a refuge for small craft.

24. A subsequent preliminary examination report showed that the costs of construction of the desired breakwater were in excess of the benefits derived and therefore this proposal was not given favorable consideration. It was considered that the less costly improvement of Chauncey Creek warranted further study.

25. During the investigation and from several conferences with town officials and local interested parties, it has become evident that the present fleet of small motored craft used by the lobster fishermen and for recreational boating have found permanent mooring in Pepperell Cove unsatisfactory due to frequent rough water conditions. The existing project in Pepperell Cove provided sufficient depth and area for the mooring of the larger schooners and barges at the time it was dredged. The smaller motored craft now in use require a more sheltered anchorage area. In addition the improvement of Chauncey Creek would give access to existing wharves and provide for increased commercial development along this sheltered creek.

26. The Pepperell Cove anchorage is considered adequate for craft over 35 feet long and with drafts of more than 4 feet. The improvement considered in this report has been designed to meet the needs of the present and reasonably prospective fishing recreational fleet of smaller boats. Although extreme low tides of

3 feet below mean low water occur infrequently it is considered that channels and anchorages 6 feet deep would be adequate for these craft. Chauncey Creek is fairly narrow and quite sheltered so that a channel width of 60 feet is sufficient for the small craft that would use it. The reasonably prospective fleet in Chauncey Creek consists of 30 boats 25 to 35 feet long and 70 boats 15 - 25 feet long. About 10 of the smaller boats would be kept ashore or grounded near their owners dock and would not require anchorage space. Based on fore and aft mooring the 30 larger boats would need 2 acres of anchorage and the 60 smaller boats would need 3 acres, a total of 5 acres.

27. The channel and anchorage needed have been located to avoid rock, permit access to 2 of the wharves and a proposed public landing in Chauncey Creek, and provide shelter and safety. The plan of improvement selected after consideration of the above factors and discussion with local interests is shown on the inclosed map. It consists of a channel 60 feet wide and 6 feet deep from Pepperell Cove about 4,000 feet into Chauncey Creek with a turning basin opposite the Witham Lobster Company, and 5 acres of anchorage 6 feet deep: 3 acres north of the channel near Pepperell Cove and 2 acres extending along the south side of the channel and near the turning basin.

SHORELINE CHANGES

28. The plan of improvement considered for Chauncey Creek will have no effect on the adjacent shorelines of the creek.

REQUIRED AIDS TO NAVIGATION

29. The United States Coast Guard has been consulted and has advised that 7 additional bouys will be required . The estimated first cost for these navigation aids is $4,000. The annual maintenance cost is estimated to be $400.

ESTIMATES OF FIRST COST

30. An estimate of the first cost of the improvement considered in this report has been made using price levels prevailing in March 1959. Probings made during the survey to determine the character of material to be dredged indicate all proposed dredging will be in ordinary material consisting of mud, sand, gravel and cobbles. Dredging quantities have been estimated in terms of in-place measurement and provide for dredging the proposed project depth plus an allowance of one foot for overdepth and with side slopes of one vertical to three horizontal. Because the material to be removed could not be

economically handled by a hydraulic dredge the cost estimate is based on use of a bucket dredge and spoil disposal in an approved dumping ground.

31. The estimated first costs of the improvement, including an allowance for contingencies, are detailed in an Appendix to this report and shown below:

Corps of Engineers' Work

Dredging Channel and Anchorage	$170,000
Engineering and Design	5,000
Supervision and Administration	10,000
Subtotal	$185,000
Pre-authorization Studies	8,000
Total Corps of Engineers' Work	$193,000

U. S. Coast Guard Work

Additional Navigation Aids	$ 4,000
Total Project Cost (March 1959)	$197,000

ESTIMATES OF ANNUAL CHARGES

32. The annual charges have been computed using a project life of 50 years and an interest rate of 2.5 percent on both Federal and non-Federal investment. Non-Federal investment costs are based on an apportionment of costs among interests in proportion to the benefits resulting from the improvement. Maintenance costs are based on an estimated shoaling rate and information furnished by the U.S. Coast Guard.

Federal Annual Charges

Interest (0.025)($182,000)	$4,500
Amortization (0.01026)($182,000)	1,900
Maintenance: Dredging	2,500
Navigation Aids	400
Total Federal	$9,300

Non-Federal Annual Charges

Interest (0.025)($15,000)	$ 400
Amortization (0.01026)($15,000)	100
Total Non-Federal	$ 500
TOTAL ANNUAL CHARGES	$9,800

ESTIMATES OF BENEFITS

33. The improvement of Chauncey Creek will result in immediate benefits to the fishing and recreational craft that visit and that are based in Pepperell Cove and Chauncey Creek. The benefits to the local commercial fishing fleet have been evaluated in terms of the additional fish catch resulting from the improvement and the elimination of a handling and trucking expense. Recreational boating benefits are evaluated in terms of increased use by the present and reasonably prospective fleet. Additional benefits would result from reduction of storm damages.

34. The reasonably prospective fishing fleet based in Chauncey Creek consists of 22 lobster boats ranging from 25 to 35 feet in length and 17 lobster boats from 15 to 25 feet long. The larger boats have a draft of from 3 to 4 feet and require at least 3 feet of tide to enter or leave Chauncey Creek under present conditions and the smaller open boats require 2 feet of tide to navigate the creek. The larger boats average 5 round trips a week for a period of 8 months during the year and the smaller craft average 3 trips per week for a period of six months each year.

Revised

35. These boats make about 5,100 trips annually. Their total catch (averaging 50 pounds per trip) is estimated at 255,000 pounds worth $97,000. Under existing conditions these boats are subject to tidal delays and restrictions. Without delays they would be able to spend more time on the fishing grounds and maintain additional lobster traps. It is estimated that the improvement of Chauncey Creek would permit a 5 percent increase in the number of lobster traps used by these fishermen and a consequent 5 percent increase in their catch. This additional catch is estimated at 12,750 pounds of lobster with an average value to the fishermen of $0.38 per pound. The annual benefit to these boats is therefore evaluated as $4,850.

36. The fishing boats based in Pepperell Cove consist of 17 larger and 8 small lobster boats. These boats make about 3,600 trips to the fishing grounds each year, and bring their catch to Pepperell

Cove or the Whitham Lobster Company on Chauncey Creek. During low tide periods the lobstermen selling to the Whitham Lobster Company unload at other landings, usually at the Pepperell Cove dock, and truck their catch to the dealer. The improvement of Chauncey Creek would permit direct delivery to the lobster dealer's dock and eliminate the handling and trucking expense. The extra work of trucking their catch is only done when low tide coincides with the fishermen's evening return from the fishing grounds and the lobster would otherwise have to be kept in the boat overnight. It is estimated that about 180 trips annually are trucked at a cost of $3.00 per trip. This benefit from the improvement is therefore evaluated as $540.

37. In addition to the benefits to the existing and reasonably prospective fishing boats in Chauncey Creek and Pepperell Cove, it is considered that additional boats would be attracted to Chauncey Creek if it is improved. It is estimated that, averaged over a 50 year project life, 2 large and 2 small new boats would be added to the Chauncey Creek fleet. These boats would make about 510 trips and catch about 25,600 pounds of lobster worth about $9,700 annually. With operating costs of 60 percent of the value of the catch the net return to the fishermen is estimated at $3,890. This amount is considered a benefit to the improvement.

38. Two of the larger boats based in Pepperell Cove would probably transfer to Chauncey Creek if it is improved. However, no increase in catch would result and it is considered that there would be no substantial benefit resulting from the transfer. These boats would share in the benefit resulting from elimination of trucking costs, evaluated above, and from reduction of storm damages, evaluated below.

39. The existing and reasonably prospective recreational fleet based in Chauncey Creek would benefit from the improvement because of the elimination of tidal delays. As specified in EM1120-2-113 this benefit is evaluated as the net gain in annual return to the owners computed as a percentage of the depreciated value of their boats. The computation is as follows:

Type	Length	No. of Boats	Depreciated Value Average	Depreciated Value Total	Annual Return Present	Annual Return Future	Gain	Value of Gain
Outboards	10'-20'	43	$300	$12,900	8%	11%	3%	$390
Inboards	10'-20'	2	$500	$ 1,000	7%	9%	2%	20
Totals		45		$13,900				$410

40. These boats are seldom away from the harbor overnight and it does not appear that the improvement would result in any substantial reduction of boat damage costs. The benefit is therefore estimated at $410.

41. Additional boats would be attracted to Chauncey Creek if it is improved. It is estimated that 5 boats would transfer from Pepperell Cove and that, averaged over a 50 year project life, 5 new boats would be added to the fleet. The resulting gain to the owners of the transferred boats is computed as follows:

Type	Length	No. of Boats	Depreciated Value Average	Depreciated Value Total	Annual Return Present	Annual Return Future	Annual Return Gain	Value of Gain
Outboards	10'-20'	2	$ 300	$ 600	8%	11%	3%	$20
Inboards	10'-20'	1	$ 500	$ 500	7%	9%	2%	$10
Cruisers	15'-30'	1	$4,000	$4,000	6%	7%	1%	$40
Sail	15'-30'	1	$5,000	$5,000	6%	7%	1%	$50
	Totals	5		$10,100				$120

42. The larger of these boats probably will spend some time on cruise. It is considered that their anchorage will be used on these occasions by boats visiting Pepperell Cove. The benefit from reduction of storm damage is evaluated below. The benefit from increased use of the transferred boats is therefore $120.

43. The benefit resulting from new recreational boats added to the Chauncey Creek fleet is computed as the annual value to the owners as follows:

Type	Length	No. of Boats	Depreciated Value Average	Depreciated Value Total	Annual Return	Value
Outboards	10'-20'	2	$ 500	$ 1,000	11%	$110
Inboards	10'-20'	1	$ 700	$ 700	9%	$ 60
Cruisers	15'-30'	1	$5,000	$ 5,000	7%	$350
Aux. Sail	15'-30'	1	$6,000	$ 6,000	7%	$420
	Totals	5		$12,700		$940

44. Although the larger boats may spend some time on cruise it is considered their anchorage will be used by similar visiting boats. The benefit for these boats is therefore $940.

45. There will also be a benefit from reduction of storm damage to fishing and recreational boats using Pepperell Cove. The present fleet of about 50 fishing and recreational boats based in Pepperell Cove and the transient boats that visit the Cove incur storm damage totaling about $4,000 annually. This amount includes boat damage, damage to gear, lost moorings and extra costs incurred to minimize storm damage. If Chauncey Creek is improved, Pepperell Cove boats will be able to take refuge in Chauncey Creek during storms. It is considered that 20 percent of the present annual storm damage will thus be eliminated. The total value of the storm damage reduction is therefore $800. Because the recreational and fishing fleets are about the same size it is considered that they will equally share in the storm damage reduction. The benefit for reduction of storm damage is therefore considered to be $400 for the fishing fleet and $400 for the recreational fleet.

46. The benefits from improvement of Chauncey Creek are summarized below:

Commercial Fishing Benefits

Increased catch by Chauncey Creek boats		$4,850
Eliminated trucking costs for Pepperell Cove boats		540
Net value of catch by new boats		3,890
	Say	9,300

Recreational Boat Benefits

To 45 Chauncey Creek boats		$ 410
To 5 Transfers from Pepperell Cove		$ 120
To 5 new boats		$ 940
	Say	$1,500

Storm Damage Reduction

Fishing boats		$ 400
Recreational boats		$ 400
		$ 800
	TOTAL	$11,600

47. The benefit to commercial fishing boats is considered to be general in nature. Benefits to recreational boats are considered to be 50 percent general and 50 percent local in nature. The allocation of the evaluated benefits is shown below:

Type of Benefit	Allocated Benefits		
	Total	General	Local
Commercial fishing	$ 9,300	$ 9,300	$ 0
Recreational boating	$ 1,500	$ 750	$750
Storm Damage Reduction:			
Fishing Fleet	$ 400	$ 400	$ 0
Recreational Fleet	$ 400	$ 200	$200
Totals (dollars)	$11,600	$10,650	$950
Totals (percent)	100%	92%	8%

COMPARISON OF BENEFITS AND COSTS

48. A comparison of the estimated benefits for the construction of an entrance channel and anchorage area in Chauncey Creek evaluated at $11,600 and the annual carrying charges of $9,800 results in a benefit-cost ratio of 1.2.

PROPOSED LOCAL COOPERATION

49. The benefits to be derived from the dredging of the channel and anchorage areas are 92 percent general and 8 percent local in nature, those accruing to fishing commerce being entirely general and those accruing to recreational craft being 50 percent general and 50 percent local. It is considered that local interests should bear a share of the first cost of the proposed improvement in proportion to the ratio of local to total benefits. Local interests therefore should be required to contribute in cash 8 percent of the construction cost. This local cash contribution is now estimated to be $15,000.

50. The public town landing in Pepperell Cove is too far away to serve the proposed anchorages in Chauncey Creek efficiently. A public landing is needed near the upper end of the Chauncey Creek channel to ensure full use of the improvement. It is therefore considered that local interests should be required to provide a suitable public landing open to all on equal terms to serve the Chauncey Creek area. The cost of this public landing is estimated at $10,000. This cost is considered to be self-liquidating.

51. In addition, local interests should be required to (a) provide all necessary lands, easements, and rights-of-way for the construction and maintenance of the project when and as required, and (b) hold and save the United States free from damages that may result from construction and maintenance of the project. It is expected that

shore access will be required only for construction supplies and dredging range flags.

52. Local interests should not be required to furnish spoil disposal areas for the material to be dredged. The materials to be dredged consist of mud, sand, gravel and cobbles. These materials can not be dredged efficiently by a hydraulic pipeline dredge small enough to operate in the proposed channel depth. In view of the lower cost for disposal at sea it is considered that local interests should not be burdened with the additional costs for providing spoil disposal areas.

53. Local interests have been consulted on the plan of improvement and the indicated requirements of local cooperation. The Selectmen of the Town of Kittery indicated that the proposed plan would satisfy local needs, and they believe that at the proper time the Town would meet the requirements of local cooperation.

APPORTIONMENT OF COSTS AMONG INTERESTS

54. The improvement of Chauncey Creek will benefit recreational navigation. One-half of recreational benefits are considered to be local benefits. The first costs of the general navigation facilities have been apportioned to the Federal Government and local interests in proportion to the general and local benefits. Of the total evaluated benefits 92 percent are general benefits and 8 percent are local benefits. The apportionment of project costs is as follows:

FEDERAL	
Corps of Engineers	
General Navigation Facilities (0.92)($185,000)	$170,000
Pre-Authorization Studies	$ 8,000
Subtotal	$178,000
U. S. Coast Guard	
Navigation Aids	$ 4,000
	$182,000
NON-FEDERAL	
Local Cash Contribution (0.08)($185,000)	$ 15,000
TOTAL PROJECT	$197,000

55. The estimated annual maintenance costs for the improvement of $2,500 for dredging and $400 for navigation aids are Federal costs to be incurred by the Corps of Engineers and the U.S. Coast Guard.

COORDINATION WITH OTHER AGENCIES

56. All Federal, State and local interests having an interest in the project were notified of the public hearing held in Kittery, Maine, August 24, 1955. All agencies present at the hearing were in favor of an improvement. Subsequent consultations with local interests have shown general approval of the plan of improvement presented in this report. When it became apparent that this improvement might be economically justified, the U. S. Coast Guard, the U. S. Fish and Wildlife Service, and State and local officials were requested to comment on the improvement. The Coast Guard indicated that additional navigation aids would be needed. The U. S. Fish and Wildlife Service commented that the improvement would not affect fish and wildlife. State and local officials provided reasonable assurance that the indicated requirements of local cooperation would be met.

DISCUSSION

57. Pepperell Cove in Kittery, Maine is located on the eastern side of Portsmouth Harbor at the mouth of the Piscataqua River and Chauncey Creek, a tidal stream, enters Pepperell Cove from the northeast between the mainland and Gooseberry Island. Chauncey Creek is a winding stream about 0.7 of a mile in length and varying in width from 300 to 150 feet with 2 foot depth below mean low water at the mouth. Pepperell Cove and Chauncey Creek are used by a fleet of 58 lobster fishing boats and 56 recreational craft which are moored in the Cove and Creek during the yachting season.

58. Under a Federal Project in 1916 an anchorage basin 12 feet deep below mean low water and about 100 acres in area was dredged in Pepperell Cove at a cost to the United States of $158,000. No Federal improvements or maintenance have been made since the completion of this project and the present depth of the anchorage averages about 9 feet below mean low water.

59. The existing anchorage in Pepperell Cove has sufficient depth and area and was considered adequate for the larger schooners and barges in use at the time it was completed. It has, however, become unsatisfactory as an anchorage for the existing fleet of comparatively small motored fishing and recreational craft due to its exposure to the south and consequent rough water conditions which have caused considerable damage to the permanently based fleet. As a

result the majority of this fleet now seek refuge in Chauncey Creek even though delayed by tidal conditions there and grounding out at low water.

60. Due to a petition from local interests for relief from existing conditions in Pepperell Cove and Chauncey Creek a review of the existing project of preliminary examination scope was authorized in April 1954. At a public hearing held in Kittery, Maine on August 24, 1955 local interests expressed a need for the construction of a breakwater between Gooseberry and Fishing Islands to provide protection for the local fleet to moor in Pepperell Cove and for the dredging of Chauncey Creek as an aid to commercial navigation and needed shelter for small recreational craft.

61. The preliminary examination report completed in December 1955 recommended no further consideration of breakwater construction due to high cost, a share of which would be required from local interests and which would be beyond what they could reasonably be expected to pay. The report also concluded that the improvement of Chauncey Creek as desired by local interests would meet the needs of existing and prospective fishing commerce and provide adequate protection for shallow draft vessels. The report recommended a survey be made to determine the cost of channel improvements warranted in Chauncey Creek for the purpose of facilitating navigation and shelter for recreational craft. This survey was authorized in a letter from the Chief of Engineers dated March 1, 1956.

62. Investigation during the preparation of this report shows that out of 58 fishing boats registered in this area about 35 now base in Chauncey Creek and operate on favorable tide conditions. The remainder of the fleet base in Pepperell Cove and in severe weather enter Chauncey Creek if tidal conditions permit or proceed to shelter at safer moorings upstream in the Piscataqua River. The recreational fleet now based in Pepperell Cove have to be either hauled out in severe weather or seek refuge in Chauncey Creek.

63. Construction of an adequate channel and anchorage area in Chauncey Creek would remove all tidal restrictions to the fishing fleet and enable them to secure supplies and dispose of their catch directly to landings along the creek adjacent to the highway. The recreational fleet now using Chauncey Creek would be able to moor their boats without grounding out at low water and would have ready access to their craft from a town landing to be constructed at the upstream end of the work. New fishing and recreational craft would be attracted by such an improvement.

64. Chauncey Creek is a highly protected area within a short distance of Pepperell Cove and is used for refuge by both fishing and recreational craft from Pepperell Cove. An improvement would reduce storm damage costs to these craft.

65. The improvement that would best meet the needs and desires of local interests consists of a channel 6 feet deep extending from Pepperell Cove about 4,000 feet to a turning basin in Chauncey Creek, with 5 acres of anchorage 6 feet deep along the channel. The total cost of this improvement is (March 1959) $197,000, including $4,000 for additional navigation aids. With annual charges of $ 9,800 and annual benefits of $11,600 the benefit cost ratio is 1.2.

66. This improvement would result in local recreational benefits amounting to 8 percent of the total benefits. A public landing in Chauncey Creek is needed to ensure full use of the improvement. Therefore, the indicated requirements of local cooperation include a cash contribution of 8 percent of the construction cost, and construction of a public landing. Local costs are estimated at $15,000 for the cash contribution and $10,000 for the public landing. Local interests have indicated that the requirements of local cooperation would be met.

CONCLUSION

67. The desires of local interests and the reasonable prospective needs of small fishing and recreational boat navigation would be satisfied by modification of the existing Federal navigation project for Pepperell Cove to provide for a channel 6 feet deep and 60 feet wide, with a turning basin; and 5 acres of anchorage, 6 feet deep in Chauncey Creek. The resulting benefits to commercial fishing and recreational boating are sufficient to justify the work. Local interests are willing to meet the indicated requirements of local cooperation.

RECOMMENDATION

68. It is recommended that the existing project for Pepperell Cove, Maine, be modified to provide for a channel 6 feet deep and 60 feet wide extending from Pepperell Cove about 4,000 feet up Chauncey Creek, with a turning basin opposite the Whitham Lobster Company, and for 5 acres of anchorage 6 feet deep, at an estimated cost to the United States of $170,000 for construction and $2,500 annually for maintenance, generally as shown on the inclosed map.

69. This modification is recommended subject to the condition that local interests:

a. Make a cash contribution of 8 percent of the construction cost of the improvement, a contribution currently estimated at $15,000.

b. Provide a suitable public landing open to all on equal terms to serve the Chauncey Creek area.

c. Provide without cost to the United States all necessary lands, easements, and rights-of-way for the construction and maintenance of the project, and

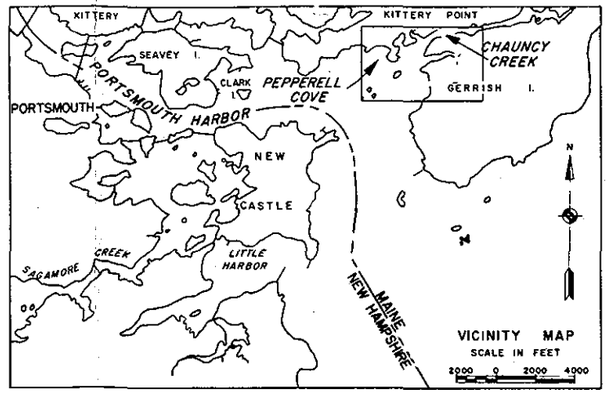
d. Hold and save the United States free from damages that may result from construction and maintenance of the project.

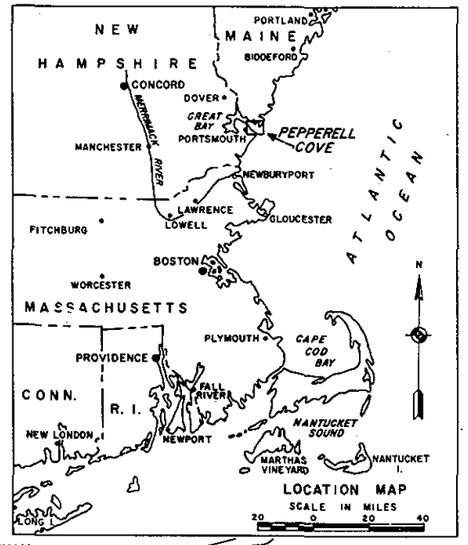
ALDEN K. SIBLEY
Brigadier General, U. S. Army
Division Engineer

2 Incls:
1. Map
2. Appendix

CORPS OF ENGINEERS U.S. ARMY

KITTERY POINT





PROPOSED LOCATION
PUBLIC LANDING

CHARLES WHITHAM LOBSTER CO.

BROWN'S WHARF

WHITHAM LOBSTER CO.

CHAUNCEY CREEK

GERRISH ISLAND

PRIVATE DOCK

KNIGHTS WHARF

ANCHORAGE

PRIVATE WHARF

TOWN LANDING

EBB Flood

PEPPERELL COVE

EXISTING PROJECT
ANCHORAGE
12 FEET DEEP AT M.L.W.

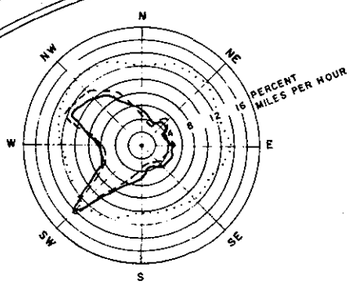
GOOSEBERRY ISLAND

PORTSMOUTH HARBOR

FISHING ISLAND

N-4

13 9 9 12 40 34 65 71



OCTOBER 1949 - SEPTEMBER 1953, INCLUSIVE

BASED ON HOURLY DURATION OF WIND SPEED AND DIRECTION OBSERVED BY U.S. WEATHER BUREAU

BOSTON AIRPORT, MASS.

WIND DIAGRAM

DESIRED IMPROVEMENT RECOMMENDED

CHANNEL	6 FEET DEEP
ANCHORAGE	6 FEET DEEP

NOTES:

Topography and hydrography from surveys by U.S.C.E. and from U.S.C.&G.S. chart No. 329

Soundings in Pepperell Cove are in feet and refer to the plane of Mean Low Water.

LEGEND

MEAN HIGH WATER

MEAN LOW WATER

6-FOOT CONTOUR

ROCK OUTCROP

RECOMMENDED IMPROVEMENT
CHANNEL
ANCHORAGE

PEPPERELL COVE
KITTERY, MAINE

IN 1 SHEET SCALE IN FEET 200 0 200 400

NEW ENGLAND DIVISION, WALTHAM, MASS. APRIL 1959

APPROVED: Chief Engineers Office

SUBMITTED: Chief Planning & Reports Branch; Chief, River and Harbor Section; Project Engineer

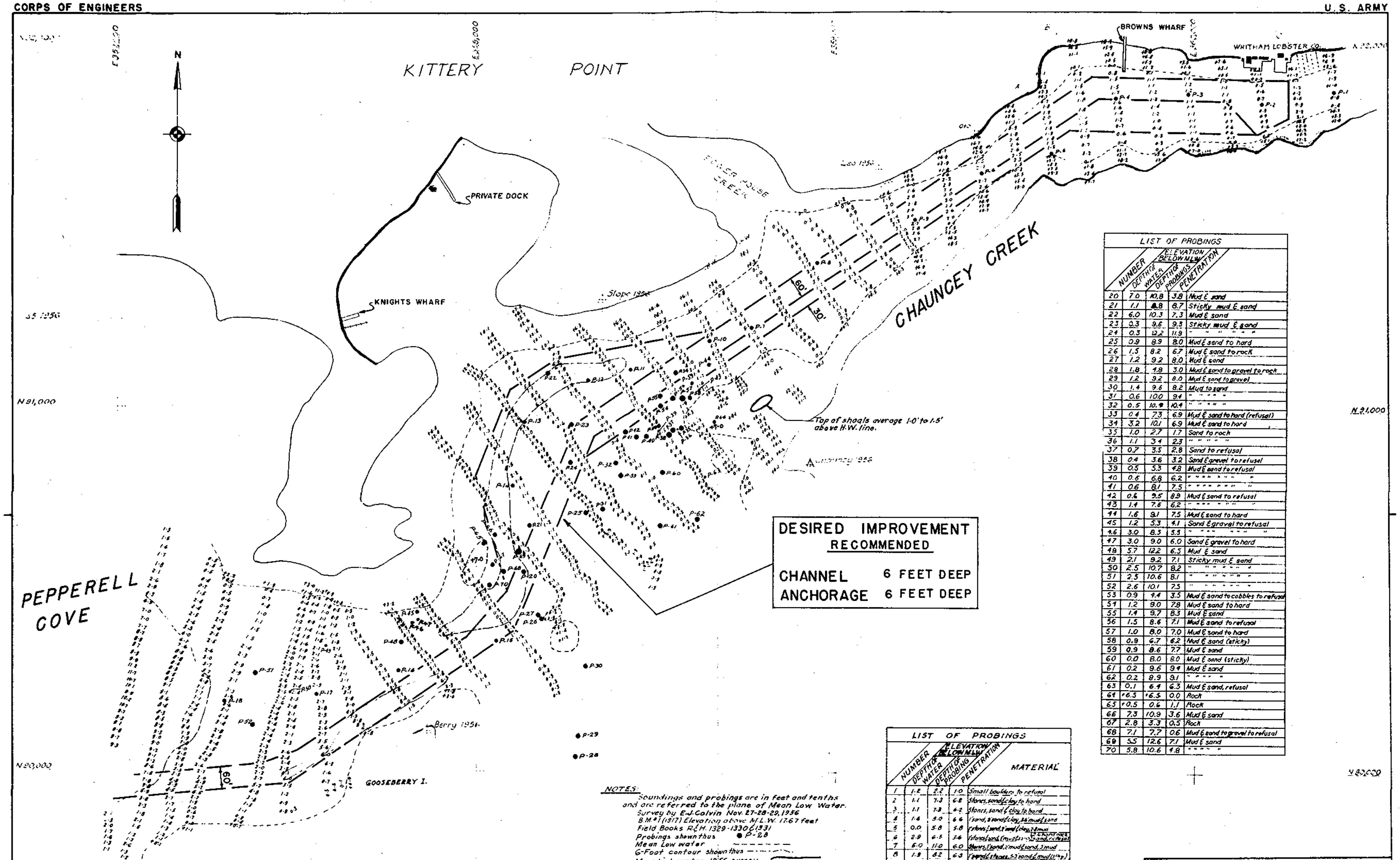
APPROVED: Lt. Col. C.E. Asst Division Engineer

TO ACCOMPANY SURVEY REPORT DATED APRIL 8, 1959

FILE No. 1404-D-8-3

PLATE 1

CORPS OF ENGINEERS　　　　　　　　　　　　　　　　　　　　　　　　U.S. ARMY



LIST OF PROBINGS				
NUMBER	ELEVATION BELOW MLW: DEPTH OF WATER	DEPTH OF PROBINGS	PENETRATION	
20	7.0	10.8	3.8	Mud & sand
21	1.1	9.8	8.7	Sticky mud & sand
22	6.0	10.3	7.3	Mud & sand
23	0.3	9.6	9.3	Sticky mud & sand
24	0.3	12.2	11.9	" " " " "
25	0.9	8.9	8.0	Mud & sand to hard
26	1.5	8.2	6.7	Mud & sand to rock
27	1.2	9.2	8.0	Mud & sand
28	1.8	4.8	3.0	Mud & sand to gravel to rock
29	1.2	9.2	8.0	Mud & sand to gravel
30	1.4	9.6	8.2	Mud to sand
31	0.6	10.0	9.4	" " "
32	0.5	10.9	10.4	" " " " "
33	0.4	7.3	6.9	Mud & sand to hard (refusal)
34	3.2	10.1	6.9	Mud & sand to hard
35	1.0	2.7	1.7	Sand to rock
36	1.1	3.4	2.3	" " " " "
37	0.7	3.5	2.8	Sand to refusal
38	0.4	3.6	3.2	Sand & gravel to refusal
39	0.5	5.3	4.8	Mud & sand to refusal
40	0.6	6.8	6.2	" " " " " " "
41	0.6	8.1	7.5	" " " " " " " "
42	0.6	9.5	8.9	Mud & sand to refusal
43	1.4	7.6	6.2	" " " " " " "
44	1.6	9.1	7.5	Mud & sand to hard
45	1.2	5.3	4.1	Sand & gravel to refusal
46	3.0	8.5	5.5	" " " " " " "
47	3.0	9.0	6.0	Sand & gravel to hard
48	5.7	12.2	6.5	Mud & sand
49	2.1	9.2	7.1	Sticky mud & sand
50	2.5	10.7	8.2	" " " " "
51	2.5	10.6	8.1	" " " " "
52	2.6	10.1	7.5	" " " " "
53	0.9	4.4	3.5	Mud & sand to cobbles to refusal
54	1.2	9.0	7.8	Mud & sand to hard
55	1.4	9.7	8.3	Mud & sand
56	1.5	8.6	7.1	Mud & sand to refusal
57	1.0	8.0	7.0	Mud & sand to hard
58	0.9	6.7	6.2	Mud & sand (sticky)
59	0.9	8.6	7.7	Mud & sand
60	0.0	8.0	8.0	Mud & sand (sticky)
61	0.2	9.6	9.4	Mud & sand
62	0.2	8.9	9.1	" " " "
63	0.1	6.4	6.3	Mud & sand, refusal
64	+6.5	+6.5	0.0	Rock
65	+0.5	0.6	1.1	Rock
66	7.3	10.9	3.6	Mud & sand
67	2.8	3.3	0.5	Rock
68	7.1	7.7	0.6	Mud & sand to gravel to refusal
69	5.5	12.6	7.1	Mud & sand
70	5.8	10.6	4.8	" " " "

DESIRED IMPROVEMENT
RECOMMENDED

CHANNEL	6 FEET DEEP
ANCHORAGE	6 FEET DEEP

NOTES:
Soundings and probings are in feet and tenths and are referred to the plane of Mean Low Water.
Survey by E.J. Colvin Nov. 27-28-29, 1956
B.M.#1 (1917) Elevation above M.L.W. 17.67 feet
Field Books R.&H. 1329-1330 & 1331
Probings shown thus ● P-28
Mean Low water — — — — —
6-Foot contour shown thus — · — · —
Mean high water 1956 survey
Mean high water U.S.C.&G.S.

Recommended improvement shown thus. ═ ═

Coordinates shown are on State of Maine Transverse Mercator Grid-West Zone.

LIST OF PROBINGS				
NUMBER	ELEVATION BELOW MLW: DEPTH OF WATER	DEPTH OF PROBING	PENETRATION	MATERIAL
1	1.2	2.2	1.0	Small boulders to refusal
2	1.1	7.3	6.2	Stones, sand & clay to hard
3	1.1	7.3	6.2	Stones, sand & clay to hard
4	1.4	8.0	6.6	1'sand, 2'sand & clay, 3.6'mud & sand
5	0.0	5.8	5.8	1'stones & sand, 2'mud & clay, 2.8 mud
6	2.9	6.5	3.6	1'stones & sand, (mud & s[illegible]) [illegible] sand, refusal
7	5.0	11.0	6.0	Stones, 1'sand, 2'mud & sand, 3'mud
8	1.9	8.2	6.3	1'sand & stones, 5.3'sand & mud (stky)
9	2.6	7.7	5.1	1'sand & stones, 4.1'stky. sand & mud
10	5.1	11.2	6.1	1'sand, 2'mud, 3.1'mud & sand
11	5.5	11.7	6.2	1'mud & sand, 5.2 soft mud
12	6.6	9.9	3.3	2'soft mud, 1.3'sand to hard
13	6.2	9.9	3.7	Stones, 2'mud, 1.7 sand to hard
14	2.5	8.6	6.1	4'mud, 2.1'sand to hard
15	2.5	8.6	6.1	1'mud & sand, 3'mud, 2.1'sand to hard
16	2.7	7.1	4.4	1'sand, 2'sand & mud, 1.4'sand to hard
17	3.0	8.6	5.6	Mud & sand to hard
18	3.9	8.5	4.6	" " " "

PEPPERELL COVE
KITTERY, MAINE
SURVEY MAP

IN 1 SHEET　　SCALE IN FEET 100 0 100 200

NEW ENGLAND DIVISION, WALTHAM, MASS.　　APRIL 1959

APPROVED: [signature] CHIEF, ENGINEERING DIVISION
SUBMITTED: [signature] CHIEF, PLANNING AND REPORTS BRANCH
[signature] CHIEF, RIVER AND HARBOR SECT.
[signature] PROJECT ENGINEER
APPROVED: [signature] Asst. DIVISION ENGINEER

TO ACCOMPANY SURVEY REPORT DATED APRIL 8, 1959

FILE NO. 1403-D-8-3

PLATE 2

SURVEY OF PEPPERELL COVE, KITTERY, MAINE

APPENDIX

ESTIMATE OF FIRST COST

1. The first cost has been estimated for the improvement considered in this report. Federal construction consists dredging a channel 60 feet wide and 6 feet deep about 4,000 feet long from Pepperell Cove into Chauncey Creek with a turning basin at the inner end of the channel, and 5 acres of anchorage 6 feet deep; 3 acres north of the channel near Pepperell Cove and 2 acres extending along the south side of the channel and near the turning basin.

2. Probings made during the study indicate all dredging will be in ordinary material including mud, sand, gravel and cobbles. Dredging volumes are estimated in terms of inplace measurement and include an allowance of one foot for overdepth and side slopes of one vertical to 3 horizontal. The dredging cost is based on use of a bucket dredge and disposal in deep water because the material to be removed could not be economically handled by a hydraulic dredge.

3. The estimate of cost is as follows:

Project Cost Estimate: (Amounts in Thousands of Dollars)

Cost Account Number	Item	Cost Estimate (March 1959)
09	Channels	
	Dredging 6' channel and anchorage (85,000 cy of ordinary material @ $ 1.77 - 150.0)	
	(Contingencies @ 13% - 20.0)	170.0
29	Pre-authorization Studies	8.0
30	Engineering and Design	5.0
31	Supervision and Administration	10.0
	Total Project Cost	193.0
Total Federal Cost		178.0
Non-Federal Contribution		15.0
Non-Federal Costs		
	Cash Contribution	15.0
	Public Landing	10.0
	Total Non-Federal Costs	25.0